

Sub B1
1. In a system capable of replicating a server copy of a resource stored on one or
2. more servers with a client copy of the resource stored on one or more clients, a method for
3. resolving a resource conflict comprising the steps of:

4. detecting, by the server, that the resource on the server conflicts with the
5. copy of the resource on a client;
6. determining, at the server, whether the conflict between the resource and the
7. copy of the resource can be resolved;
8. creating, by the server, a conflict resource, if the conflict cannot be resolved
9. at the server;
10. evaluating, at the client, whether the conflict resource can be resolved in
11. accordance with a schema of the client if the conflict was not resolved at the server;
12. and
13. presenting the conflict resource to a user if the conflict resource cannot be
14. resolved by the client.

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16. 2. A method as defined in claim 1, wherein the step of detecting further
17. comprises the step of comparing a client resource tag, provided by the client, with a server
18. resource tag.

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20. 3. A method as defined in claim 2, wherein the client resource tag is
21. representative of a version of the resource.

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23. 4. A method as defined in claim 2, wherein the server resource tag is
24. representative of a version of the resource.

1 5. A method as defined in claim 1, wherein the step of determining further
2 comprises the step of resolving the conflict at the server.

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4 6. A method as defined in claim 1, wherein the step of determining further
5 comprises the step of comparing the client copy of the resource with the server copy of the
6 resource.

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8 7. A method as defined in claim 1, wherein the conflict resource comprises the
9 server copy of the resource and the client copy of the resource.

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11 8. A method as defined in claim 1, wherein the step of evaluating further
12 comprises the step of resolving the conflict at the client in accordance with the schema.

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14 9. A method as defined in claim 1, further comprising the steps of:
15 uploading the resolved conflict resource to the server; and
16 returning a new resource tag to the client from the server.

10. In a system having multiple copies of a resource, a method for detecting and
11. resolving a conflict between a client copy of the resource and a server copy of the resource,
12. the method comprising the steps of:
13. receiving, from the client, a client resource tag at the server, wherein the
14. client resource tag identifies a client version of the client copy of the resource;
15. determining, by the server, whether the client resource tag matches the server
16. resource tag, wherein the server resource tag identifies a server version of the server
17. copy of the resource;
18. determining that a conflict exists if the client resource tag does not match the
19. server resource tag; and
20. executing a server level of conflict resolution between the client copy of the
21. resource and the server copy of the resource at the server.

22. 11. A method as defined in claim 10, wherein the step of determining by the
23. server further comprises the step of comparing the client resource tag with the server
24. resource tag.

25. 12. A method as defined in claim 10, wherein the client resource tag is
26. transmitted to the server in a PUT method.

27. 13. A method as defined in claim 10, further comprising the step of initiating the
28. conflict detection from the client.

1 14. A method as defined in claim 10, wherein the step of executing a server level
2 of conflict resolution further comprises the step of comparing the client copy of the resource
3 with the server copy of the resource.

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5 15. A method as defined in claim 14, further comprising the step of resolving the
6 conflict if the client copy of the resource ~~matches~~ the server copy of the resource.

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8 16. A method as defined in claim 14, further comprising the step of resolving the
9 conflict in accordance with a schema known to the server.

17. In a system having one or more server copies of a resource and one or more
1 client copies of a resource, a method for resolving a conflict between a server copy of the
2 resource and a client copy of the resource, the method comprising the steps of:

3 receiving, from a server, a conflict resource at a client; and
4 executing a client level of conflict resolution between the client copy of the
5 resource and the server copy of the resource at the client.

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8 18. A method as defined in claim 17, wherein the conflict resource comprises the
9 server copy of the resource.

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11 19. A method as defined in claim 17, wherein the conflict resource comprises the
12 server copy of the resource and the client copy of the resource.

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14 20. A method as defined in claim 17, wherein the conflict resource comprises a
15 set of differences existing between the server copy of the resource and the client copy of the
16 resource.

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18 21. A method as defined in claim 17, wherein the conflict resource comprises
19 information useful to the client for resolving the conflict.

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21 22. A method as defined in claim 17, further comprising the step of detecting a
22 conflict by a server.

1 23. A method as defined in claim 17, further comprising the step of detecting a
2 conflict by comparing a client resource tag with a server resource tag, wherein the client
3 resource tag is representative of a version of the client copy of the resource and the server
4 resource tag is representative of a version of the server copy of the resource and a conflict is
5 detected if the client resource tag and the server resource tag do not match.

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7 24. A method as defined in claim 17, further comprising the step of executing a
8 server level of conflict resolution.

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10 25. A method as defined in claim 24, wherein the step of executing a server level
11 of conflict resolution further comprises the step of resolving the conflict.

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13 26. A method as defined in claim 17, wherein the step of executing a client level
14 of conflict resolution further comprises the step of resolving the conflict in accordance with
15 a schema known to the client.

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17 27. A method as defined in claim 17, wherein the step of executing a client level
18 of conflict resolution further comprises the step of comparing the changes made to the client
19 copy of the resource and the server copy of the resource.

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21 28. A method as defined in claim 17, wherein the step of executing a client level
22 of conflict resolution further comprises the step of uploading the resolved conflict resource
23 to the server.

1 29. A method as defined in claim 28, further comprising the step of returning to
2 the client a new resource tag, wherein the new resource tag identified the current version of
3 the server copy of the resource and the client version of the resource.

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30. In a system capable of replicating resources from one or more servers to one or more clients, a method for resolving a conflict, the method comprising the steps of:

- detecting the conflict, wherein detecting the conflict comprises the steps of:
 - transmitting a client resource tag to a server;
 - comparing, by the server, the client resource tag with a server resource tag; and
 - determining that there is a conflict between a client copy of a resource and a server copy of the resource if the client resource tag does not match the server resource tag; and
 - executing one or more levels of conflict resolution until the conflict is resolved.

31. A method as defined in claim 30, wherein a first level of conflict resolution is a server level of conflict resolution, a second level of conflict resolution is a client level of conflict resolution and a third level of conflict resolution requires an end user to resolve the conflict.

32. A method as defined in claim 31, wherein the step of executing one or more levels further comprises the step of executing the server level of conflict resolution at the server.

33. A method as defined in claim 31, wherein the step of executing one or more levels further comprises the step of executing the client level of conflict resolution at the client.

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3 34. A method as defined in claim 31, wherein the step of executing one or more
4 levels further comprises the step of executing a third level of conflict resolution.

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6 35. A method as defined in claim 30, wherein the step of executing one or more
7 levels further comprises the step of resolving the conflict.

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9 36. A method as defined in claim 30, wherein the step of executing one or more
10 levels further comprises the step of resolving the conflict in accordance with a schema.

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12 37. A method as defined in claim 36, wherein the schema is known to the server.

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14 38. A method as defined in claim 36, wherein the schema is known to the client.

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16 39. A method as defined in claim 30, wherein the step of executing one or more
17 levels further comprises the steps of uploading the resolved resource to the server and
18 transmitting a new resource tag to the client.

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40. In a system capable of replication a resource from one or more server to one
2 or more clients, a computer program product for a method for detecting and resolving
3 resource conflicts, the computer program product comprising:

4 a computer readable medium carrying computer executable instructions for
5 implementing the method, wherein the computer executable instructions comprise:
6 program code means for detecting a resource conflict;
7 program code means for comparing a client resource tag with a server
8 resource tag, wherein the client resource tag and the server resource tag are
9 representative of a version of the resource;
10 program code means for resolving the conflict at the server;
11 program code means for creating a conflict resource if the conflict
12 cannot be resolved at the server;
13 program code means for resolving the conflict at the client by
14 evaluating the conflict resource in accordance with a schema known to the
15 client; and
16 program code means for presenting the conflict resource to an end
17 user for conflict resolution if the client cannot resolve the conflict.

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19 41. A computer program product as in claim 40, wherein the computer
20 executable instructions further comprise program code means for:

21 uploading the resolved conflict resource to the server; and
22 providing the client with a new resource tag.

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42. In a system capable of replicating a resource between a client and a server, a
2 computer program product for a method for detecting and resolving a conflict between a
3 client copy of the resource and a server copy of the resource, the computer program product
4 comprising:

5 a computer readable medium carrying computer executable instructions for
6 implementing the method, wherein the computer executable instructions comprise:

7 program code means for transmitting a client resource tag to a server;

8 program code means for comparing, by the server, the client resource tag
9 with a server resource tag;

10 program code means for determining that there is a conflict between a client
11 copy of a resource and a server copy of the resource if the client resource tag does
12 not match the server resource tag; and

13 program code means for executing one or more levels of conflict resolution
14 until the conflict is resolved.

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16 43. A computer program product as in claim 42, wherein the computer
17 executable instructions further comprise program code means for:

18 executing a server level of conflict resolution;

19 executing a client level of conflict resolution; and

20 executing a third level of conflict resolution.